

Just the Facts...

Stored Product Pests Granary Weevil

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Granary weevils (*Sitophilus granarius*) are significant pests of stored grains including corn, rye, barley, wheat, rice, and occasionally feed on macaroni and spaghetti. They readily infest sunflower seeds, bird seed, ornamental corn, and whole grain based rodent bait.

What do they look like? The granary weevil adults are cylindrical, 3/16-inch in length with a distinct snout extending downward about one quarter the length of the body. They are shiny red-black with ridged wing covers and oval pits on the thorax. The larvae are soft, white, fleshy, legless grubs with a tan head. The egg, larva, and pupa all live inside the grain kernels and are rarely seen in infested products. When disturbed, the adults will feign death by drawing in their legs close to the body, falling and remaining silent.

How do they get in? The adults do not fly but may walk great distances inside warehouses and homes. Granary weevils are found almost exclusively in grain products and are usually transported inside food packaged at the processing plant. The weevils may also be found on the outside of pallets containing food products and between boxes and bags of food on palletized cargo. The increased use of air-tight plastic or foil bags and pouches has minimized granary weevil infestations during transit and storage.

Where do they live? Granary weevils live inside the products as larvae, but emerge as adults to seek mates. Adult weevils are often found along window sills. This may be the first indication that a warehouse is infested, but it will not indicate which products contain weevils or where infested products are located.

Do they multiply? Yes. The adult female lays approximately 30-250 eggs. The adult female chews a small hole in a grain kernel, deposits one egg, and then seals the hole with a gel-like fluid. The adult emerges and seeks a mate. The life cycle takes about 5 weeks during the summer, but may take up to 20 weeks in cooler temperatures. The adults live approximately 7-8 months. Researchers estimate that one pair of weevils may produce up to 6,000 offspring in one year.



S. granarius larvae
USDA-ARS-GMPRC



Sitophilus granarius (left) and *S. oryzae*, (right). Claude Schott, Entomologie en Alsace 2007

What damage do they cause? Adult granary weevils feed on broken grain kernels and grain dust, but the larvae feed exclusively inside the grain kernels until they pupate. The presence of adult weevils is often the first sign on an infestation. Infested grains exhibit holes where the adults have emerged. Grain which floats to the surface when immersed in water often indicates larval damage inside the kernel. Whole grains sold in bulk food bins may have higher infestation rates than packaged goods since bulk food remains in stores longer and residual grain may be left following refilling the bulk containers. Weevils infesting bulk food bins can quickly move to uninfested products in the vicinity.

Prevention methods. Sanitation and inspection are the keys to good granary weevil control. Pheromone traps are useful in determining if weevils are active in warehouses, but the traps must be placed in locations where the weevils can walk to the bait since they do not fly. Weevils found in pheromone traps will not indicate the location of infested products. Inspect pallets of food upon arrival at warehouses, and inspect individual products when brought home from retail outlets. Adult insects or holes in grain kernels are indications of infestations. Inspect salvage areas in food warehouses since spillage from broken packages is more common than in the storage areas. Check rodent bait stations weekly to ensure whole grain-based baits are not infested.

Control methods. Inspect and clean vehicles used to transport food to remove spilled material. Remove spilled food daily and clean warehouses with a vacuum monthly, especially along walls and the edges of pallets where weevils and food products tend to accumulate. Place food pallets at least 18 inches from walls to permit routine inspection and cleaning. Rotate food products so that older stocks are sold first; frequently inspect food with older manufacturing dates for infestations since adult weevils tend to emerge from packages in greater numbers as the infestation ages. This principle also applies in the home since weevils from a single infested product can migrate and infest multiple food products stored in a kitchen or pantry. Store infestible products in containers with tight fitting lids if the contents are not used within one week after opening. Place infested products inside plastic bags prior to disposal to reduce the spread of adult weevils. Segregate infested products in warehouses from non-infested products and cover with plastic until treatment or disposal. Place infested products in a freezer at 0 degrees Fahrenheit for 4 days to kill adults, larvae, and eggs. Do not reissue infested products or use for food preparation even after weevils are killed.

For more information on surveillance and control of stored product pests, see the Armed Forces Pest Management Board Technical Guide No. 27, Stored-Product Pest Monitoring Methods, June 2005, and Technical Guide No. 38, Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence During Storage, June 2005 at <http://www.afpmb.org/pubs/tims/tims.htm>.